# Stand Quality Management of Southern Hardwood Forests

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# Cooperators

- **Louisiana Dept. of Wildlife and Fisheries**
- **Gulf States Paper Corporation**
- **Temple-Inland Forest Products Corp.**

# STAND DENSITY MANAGEMENT

# PUTNAM'S TREE CLASSIFICATION SYSTEM

- **Preferred growing stock – "leave" trees**
- **Reserve growing stock – "storage" trees**
- **Cutting stock – "cut" trees**
- **Cull stock – "cull" trees**

# PROBLEMS
## Putnam's Tree Classification System

- **Reserve class is poorly defined, too broad, and becomes a "catch-all" class**
- **Classification system is not well-suited for poletimber trees in sawtimber stands**

# NEW HARDWOOD TREE CLASSES

# BASIS FOR NEW TREE CLASSIFICATION SYSTEM

- Species
- Crown class
- Current condition and future risk of mortality or degrade in merchantability
- Bole quality
- Expected change in value over time

Preferred Growing Stock

# Desirable Growing Stock

# Acceptable Growing Stock

# Cutting Stock

# Cull Stock

# Superior Poletimber Stock

# Inferior Poletimber Stock

# COMPARISON

**Putnam's System**

- Preferred
- Reserve
- Cut
- Cull

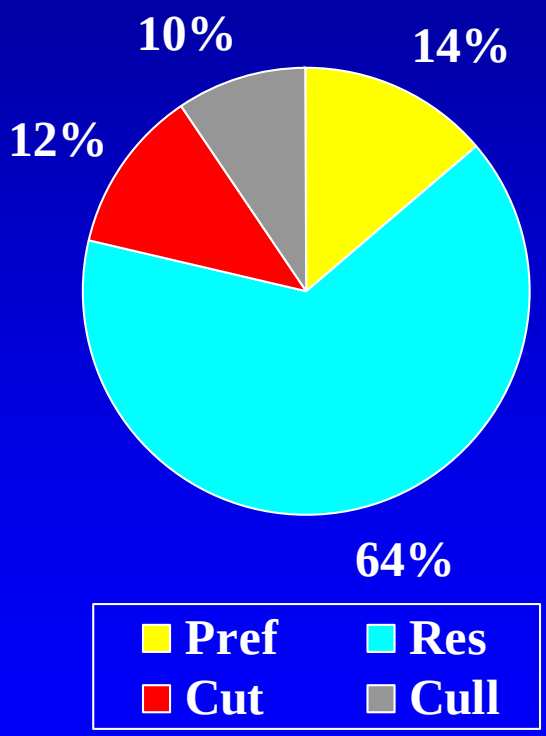
**New System**

- Preferred
- Desirable
- Acceptable
- Cut
- Cull
- Superior Pole
- Inferior Pole

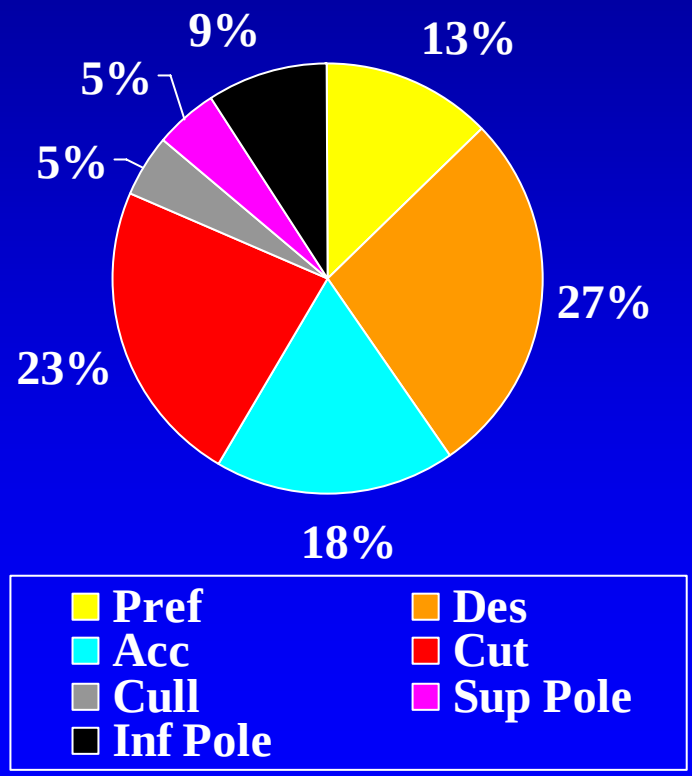
# TREE CLASS DISTRIBUTIONS

## Percent of Basal Area – Pre-Harvest

### Current




### New



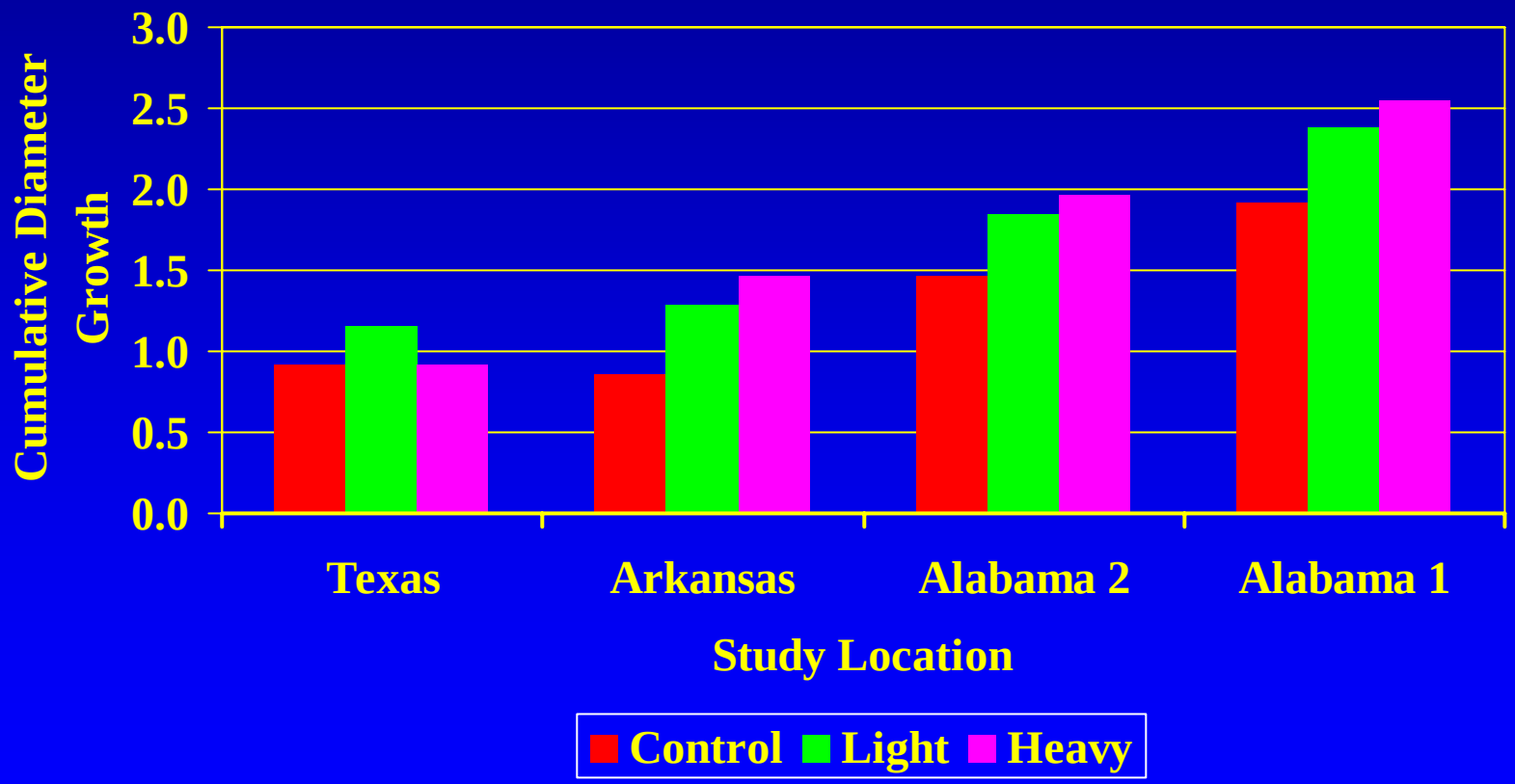
# STAND DENSITY MANAGEMENT

# PROBLEMS
## Stand Density Management

- Timber marker must decide which Reserve trees to cut and which ones to leave
- Hard to accurately and consistently visualize the prescribed level of residual stand density
- May have to leave poor trees or cut good trees to maintain target residual density across the stand

# Diameter Growth

## Dominant/Codominant Red Oaks



# STAND
# QUALITY
# MANAGEMENT

# POSSIBLE PRESCRIPTIONS

- ***Acceptable with Superior Poletimber***

  **Leave Pref, Des, Acc, and Sup Pole**

- ***Acceptable with No Poletimber***

  **Leave Pref, Des, and Acc**

- ***Desirable with Superior Poletimber***

  **Leave Pref, Des, and Sup Pole**

- ***Desirable with No Poletimber***

  **Leave Pref and Des only**

# GUIDELINES TO IMPLEMENT STAND QUALITY MANAGEMENT

- Conduct thinning when stocking exceeds 100% and initial quality is acceptable
- Select appropriate prescription
    a. initial stand quality
    b. stage of stand development
- Mark the stand to remove only those tree classes specified in the selected prescription

# COMPARISON OF PROPOSED PRESCRIPTIONS

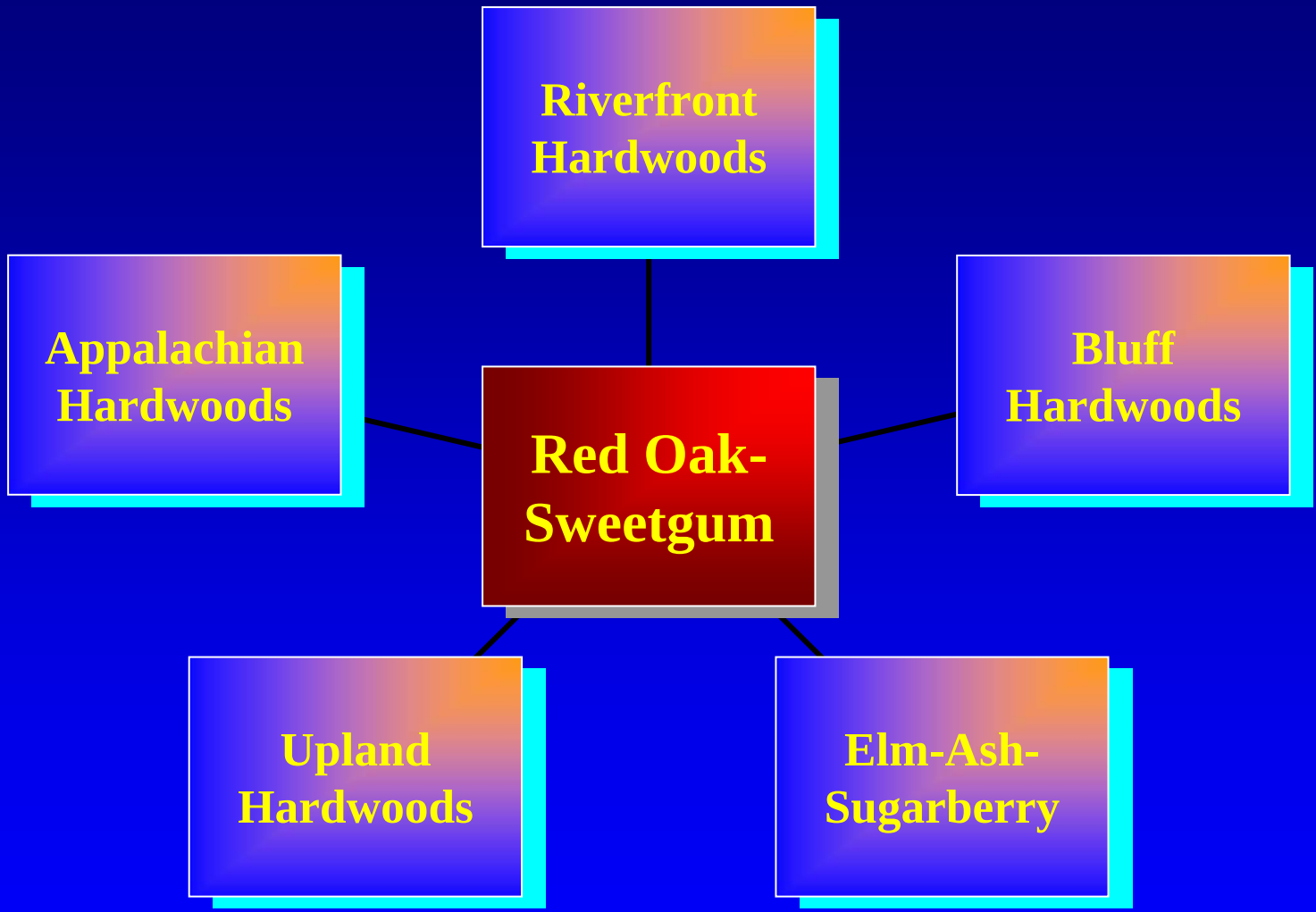
| PRESCRIPTIONS | TPA | BA | QMD | STOCK |
|---|---|---|---|---|
| Acc/Sup Pole | 60 | 77 | 15.4 | 63 |
| Acc/No Pole | 42 | 71 | 17.5 | 57 |
| Des/Sup Pole | 41 | 55 | 15.8 | 45 |
| Des/No Pole | 23 | 49 | 19.7 | 39 |

# PROBLEMS

- Selection of inappropriate prescription may compromise residual stand quality and value
- Residual density may not be uniform across the stand
- Desirable residual trees may be clumped

# CONCEPTUAL MODEL
# STAND QUALITY MANAGEMENT

| INITIAL QUALITY | STAGE OF STAND DEVELOPMENT: Early/Mid | STAGE OF STAND DEVELOPMENT: Late |
|---|---|---|
| Medium | Acc/Sup Pole | Acc/No Pole |
| High | Des/Sup Pole | Des/No Pole |


Riverfront Hardwoods
Appalachian Hardwoods
Red Oak-Sweetgum
Bluff Hardwoods
Upland Hardwoods
Elm-Ash-Sugarberry